

Abstract

An inexpensive and compact modulator-integrated light source is capable of obtaining an extinction ratio of 10 dB sufficient for use in optical communication without requiring an amplifier or temperature regulating mechanism. The modulator-integrated light source is composed of a semiconductor laser and modulator integrated on high-resistance semiconductor substrate 1. The electroabsorption optical modulator has P-electrode 14 and N-electrode 32 which are arranged on one surface of high-resistance semiconductor substrate 1 and to which a prescribed bias voltage is applied, and the electroabsorption optical modulator is constructed to satisfy the condition: $L \times B \geq 2000 \mu\text{m} \cdot \text{Gb/s}$, where L is the length of the electroabsorption optical modulator and B is the operating frequency.